

CLAIMS

We claim:

1. A method for modifying cytokine expression in a cell comprising contacting the cell with a modulator of Notch signalling.
- 5 2. The method of claim 1, wherein the cytokine is TNF.
3. The method of claim 1, wherein the cytokine is TNF $\alpha$ .
4. The method of claim 1, wherein the cytokine is IL-5.
5. The method of claim 1, wherein the cytokine is IL-13.
6. The method of claim 1, wherein the cytokine is IL-10.
- 10 7. The method of claim 3, wherein the modulator of Notch signalling is an activator of Notch signalling, and wherein TNF $\alpha$  expression is reduced.
8. The method of claim 3, wherein the modulator of Notch signalling is an inhibitor of Notch signalling, and wherein TNF $\alpha$  expression is increased.
9. The method of claim 6, wherein the modulator of Notch signalling is  
15 an activator of Notch signalling, and wherein IL-10 expression is increased.
10. The method of claim 6, wherein the modulator of Notch signalling is an inhibitor of Notch signalling, and wherein IL-10 expression is reduced.
11. The method of claim 4, wherein the modulator of Notch signalling is an activator of Notch signalling, and wherein IL-5 expression is reduced.
- 20 12. The method of claim 4, wherein the modulator of Notch signalling is an inhibitor of Notch signalling, and wherein IL-5 expression is increased.
13. The method of claim 5, wherein the modulator of Notch signalling is an activator of Notch signalling, and wherein IL-13 expression is reduced.
14. The method of claim 5, wherein the modulator of Notch signalling is  
25 an inhibitor of Notch signalling, and wherein IL-13 expression is increased.
15. The method of claim 1, wherein the cell is a leukocyte, fibroblast or epithelial cell.
16. The method of claim 1, wherein the cell is a lymphocyte or macrophage.
- 30 17. A method for generating, in a cell, an immune modulatory cytokine profile with
  - a) increased IL-10 expression and

- b) (i) reduced TNF $\alpha$  expression, (ii) reduced IL-5 expression or (iii) reduced IL-13 expression,

comprising contacting the cell with a modulator of Notch signalling.

18. A method for generating, in a cell, an immune modulatory cytokine profile with reduced IL-5, IL-13 and TNF $\alpha$  expression comprising contacting the cell with a modulator of Notch signalling.

19. The method of claim 18, wherein the cytokine profile also exhibits reduced IL-2 and IFN $\gamma$  expression.

20. The method of claim 18, wherein the cytokine profile also exhibits increased IL-10 expression.

21. A method for reducing a TH2 immune response in a subject in need thereof comprising administering a cell in which cytokine expression is modified according to claim 1, or a modulator of Notch signalling, to the subject.

22. A method for reducing a TH1 immune response in a subject in need thereof comprising administering a cell in which cytokine expression is modified according to claim 1, or a modulator of Notch signalling, to the subject.

23. A method for treating inflammation, an inflammatory condition or an autoimmune condition, in a subject in need thereof, comprising administering a cell in which cytokine expression is modified according to claim 1, or a modulator of Notch signalling, to the subject.

24. The method of claim 23, wherein TNF $\alpha$  expression is reduced in the cell or in immune cells of the subject.

25. The method of claim 1, wherein the modulator of Notch signalling is administered to the cell *in vivo* in a patient in need thereof.

26. The method of claim 1, wherein the modulator of Notch signalling is administered to the cell *ex-vivo*, after which the cell is administered to a patient in need thereof.

27. A method for treating a disease associated with excessive TNF $\alpha$  production, excessive IL-5 production or excessive IL-13 production, in a subject in need thereof, comprising administering a cell in which cytokine expression is modified according to claim 1, or a modulator of Notch signalling, to the subject.

28. The method of claim 1, wherein the modulator of Notch signalling comprises a protein or polypeptide comprising a Notch ligand DSL domain or a polynucleotide sequence encoding the protein or polypeptide.

5 29. The method of claim 28, wherein the protein or polypeptide comprises at least one EGF-like domain.

30. The of claim 29, wherein the DSL domain and/or EGF domain is from Delta or Jagged.

31. The method of claim 1, wherein the modulator of Notch signalling comprises a fusion protein comprising a segment of a Notch ligand extracellular domain and an immunoglobulin F<sub>c</sub> segment or a polynucleotide encoding said fusion protein.  
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32. The method of claim 1, wherein the modulator of Notch signalling comprises a Notch intracellular domain (Notch IC) or a polynucleotide sequence encoding a Notch IC.

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